

IN THE CLAIMS:

Claims 1-64. (canceled)

65. (new) A composition comprising a chimeric nucleic acid; wherein said chimeric nucleic acid encodes a polypeptide; wherein said polypeptide comprises a first domain, a second domain, and a third domain; wherein said first domain comprises a retention signal peptide; wherein said second domain comprises a recognition site; wherein said third domain comprises a reporter molecule.
66. (new) The composition of Claim 65, wherein said retention signal is a cellular component retention signal.
67. (new) The composition of Claim 65, wherein said retention signal is a Golgi Apparatus retention signal.
68. (new) The composition of Claim 67, wherein said Golgi Apparatus retention signal comprises the sequence motif KDEL (SEQ ID NO: 1).
69. (new) The composition of Claim 67, wherein said Golgi Apparatus retention signal comprises the sequence motif NEFA (SEQ ID NO: 2).
70. (new) The composition of Claim 65, wherein said Golgi Apparatus retention signal comprises a retention signal from Golgi glycosyltransferase.
71. (new) The composition of Claim 70, wherein said Golgi glycosyltransferase comprises a glucosaminyltransferase I (GlcNAcTI), a beta 1,4-galactosyltransferase (GalT) or an alpha 2,6-sialyltransferase (ST).
72. (new) The composition of Claim 65, wherein said retention signal is an Endoplasmic Reticulum retention signal.

73. (new) The composition of Claim 65, wherein said protease cleavage site is positioned between said first domain and said second domain.
74. (new) The composition of Claim 65, wherein said recognition site comprises a protease cleavage site.
75. (new) The composition of Claim 65, wherein said recognition site comprises two protease cleavage sites.
76. (new) The composition of Claim 74, wherein said protease cleavage site comprises a secretase cleavage site.
77. (new) The composition of Claim 76, wherein said secretase cleavage site comprises a beta-secretase cleavage site.
78. (new) The composition of Claim 77, wherein said beta-secretase cleavage site comprises the sequence motif SEVKMDAELF (SEQ ID NO: 3).
79. (new) The composition of Claim 77, wherein said beta-secretase cleavage site comprises the sequence motif SEVNLD AEF (SEQ ID NO: 4).
80. (new) The composition of Claim 76, wherein said secretase cleavage site comprises a gamma-secretase cleavage site.
81. (new) The composition of Claim 65, wherein said reporter molecule comprises an enzyme.
82. (new) The composition of Claim 81, wherein said enzyme comprises an alkaline phosphatase.

- 83. (new) The composition of Claim 65, wherein said reporter molecule comprises a flurophore.

- 84. (new) The composition of Claim 83, wherein said flurophore comprises a green fluorescent protein (GFP).

- 85. (new) The composition of Claim 84, wherein said reporter molecule comprises a bioluminescent or a chemiluminescent polypeptide.

- 86. (new) The composition of Claim 85, wherein said chemiluminescent polypeptide comprises luciferase.

- 87. (new) The composition of Claim 85, wherein said bioluminescent or chemiluminescent polypeptide comprises an aequorin, an obelin, a mnemiopsin or a berovin.

- 88. (new) The composition of Claim 65 further comprising a promoter; wherein said chimeric nucleic acid is operably linked to said promoter.

- 89. (new) The composition of Claim 88, wherein said promoter is a constitutive promoter.

- 90. (new) The composition of Claim 88, wherein said promoter is an inducible promoter.

- 91. (new) The composition of Claim 65, wherein said composition is an expression vector.

- 92. (new) The composition of Claim 65, wherein said composition is an expression cassette.

- 93. (new) The composition of Claim 65, wherein said composition is a transformed host cell.

94. (new) The composition of Claim 93, wherein said transformed host cell is selected from the group consisting of a bacterial cell, a mammalian cell, a yeast cell, an insect cell, and a plant cell.
95. (new) A kit comprising the composition of Claim 65, and instructions for use.
96. (new) The kit of Claim 95, further comprising a substrate for said bioluminescent polypeptide, said chemiluminescent polypeptide, or said alkaline phosphatase.